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ABSTRACT

This study examined cognitive, that is, information processing, style and its relationship to the experiencing of sources of job satisfaction/dissatisfaction and cognitive demands of the work environment among employees in small and medium sized enterprises (SMEs). The aim of the study was to gain a more thorough understanding of the role of cognitive style in work contexts. The objective was to investigate whether and how intuitive and analytic cognitive styles are related to the experiencing of the work environment as well as to intrinsic and extrinsic sources of job satisfaction/dissatisfaction. Data was collected from 228 managers and workers in service and production industry jobs in Finland through modified translations of the Cognitive Style Index (C. Allinson and J. Hayes, 1996) and the Academic Environment Index (E. Sadler-Smith and J. Little, 1998). In addition, data on sources of job satisfaction/dissatisfaction were collected from 126 employees in the sample through 2 open-ended qualitative interview questions. The qualitative responses were content analyzed and categorized, and each subject was given a rating for further statistical analyses, which included exploratory factor analysis, analysis of variance, and general linear modeling. There are significant differences in cognitive style between respondents in different positions, with different levels of education and different age groups, but there appears to be no clear relationship between cognitive style and sources of job satisfaction and dissatisfaction. Knowledge about employees' cognitive style may be utilized by human resources managers in recruitment, employee selection, workforce planning, job design, team composition, training, and development. (Contains 49 references.) (Author/SLD)

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Cognitive Style and the Experiencing of Cognitive Demands of the Work Environment and Sources of Job Satisfaction among Employees in SMEs

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Abstract

The paper examines cognitive, that is information processing style and its relationship to the experiencing of 1) sources of job satisfaction/dissatisfaction, and 2) cognitive demands of the work environment among employees in small and medium sized enterprises. The aim of the study is to gain a more thorough understanding of the role of cognitive style in work contexts. The objective is to investigate whether and how intuitive and analytic cognitive style are related to the experiencing of the work environment as well as to intrinsic and extrinsic sources of job satisfaction/dissatisfaction.

Data has been collected from 228 managers, employees and workers in service and production industry with modified translations of the Cognitive Style Index and .the Academic Environment Index. In addition, data on sources of job satisfaction/dissatisfaction were collected from 126 employees and workers in the sample through two open-ended qualitative interview questions. The qualitative responses were content analyzed and categorized, and each subject given a rating for further statistical analyses, which include exploratory factor analysis, analysis of variance and general linear modeling.

There are significant differences in cognitive style between respondents in different positions, with different levels of education and different age groups, however, there appeared to be no clear relationship between cognitive style and sources of job satisfaction and dissatisfaction. Knowledge about employees' cognitive style may be utilized by human resources managers in recruitment, employee selection, workforce planning, job design, team composition, training, and development.

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Background and Objectives

The objective is to study cognitive style, the perception of work environmental cognitive demands, and the perception of causes of job satisfaction and dissatisfaction in work contexts. Through knowledge of cognitive style and the perception of the environmental demands human resources can be managed and developed more effectively, and job satisfaction be improved. The development of management, training, supervision, organizational structure, job enrichment, job rotation, payment and bonus systems etc. are often based on the assumption that these and increased job satisfaction are prerequisites for increasing productivity. Despite the fact that productivity may not always be the outcome of the actions taken, job satisfaction is of importance and of humanitarian value in itself. The improvement of job satisfaction is a legitimate goal that all employers should be concerned about (cf. Smith & al. 1969).

The idea for the study grew initially out of the fact that the workforce is ageing, and the participation of older workers in working life has decreased over the years in most OECD countries. The early retirement culture poses a threat to the labor supply and the balancing of national social security budgets, as these are being used to manage transition from work to retirement. The number of old people and the average life expectancy increases, but becoming old, from the perspective of working life, happens at a younger age than before. The pace of work has become increasingly hectic as information and communication technology have rapidly changed previously time-consuming tasks to fast daily routines. If the objective is to maintain people in gainful activity longer it will be necessary to adjust retirement as well as work and training policies to the needs of the ageing. (OECD 1996; Ageing and the Labour Market 1997.)

What can employers do in order to keep knowledge and skills in the company, instead of loosing these through early retirement, and the underutilization of human resources due to ineffective work organization and training schemes or poor employee policies? My concern is, particularly, how knowledge about cognitive style and their effect on the perception of environmental cognitive demands could be utilized to increase job satisfaction and improve the management of human resources. It should be the interest of organizations not only to make an effort to keep knowledge within them, but also to pass it on to employees of younger generations. Individual differences in causes of job satisfaction should be taken into account in human resources management, training, work design and redesign, just to mention a few situations in which job satisfaction may be affected.

In the present study focus is on small and medium size enterprises as these are ideal sites for the study of cognitive style and causes of job satisfaction. SMEs are in a special position as a major employer. They usually lack specific human resources development and training schemes. Small organisations do not take advantage of personality and ability testing in training (Forrester & al. 1995). The direct costs of training in addition to the lack of training opportunities pose problems (Pearson 1996). On the other hand, SMEs are ideal sites for human resources development, because of more direct communication, flexibility, flatter hierarchy, the relatively greater impact of single employee's actions on the whole organisation, and greater insecurity, which makes the organisation more responsive to labor market changes and customer demands. Development programs are more informal, and may thus have a greater impact than rigid programs in large organisations. (Bacon, Ackers, Storey & Coates 1996.)

Theoretical Rationale

Analytic and Intuitive Cognitive Style

Cognitive, also called perceptual styles are the *individual differences* in information processing, such as the activities of thinking, knowing and problem solving (Riding 1997; Hayes & Allinson 1994), in preferred information gathering and assessment style (Hunt 1991), and in the construction of relationships (Vernon 1973; Entwistle & Ramsden 1983). The lack of organization among the theories in the increasingly detailed field has made it difficult to grasp the concept and the construction of cognitive style. Style dimensions are overlapping and new measures have been introduced without systematic analyses on correlation to existing instruments (Grigorenko and Sternberg 1995).

The present study is based on the theoretical framework by Hayes and Allinson (1994) which represents the cognition-centered[1] research tradition. Other researchers within the tradition are Kagan and al. (1964), Guilford (1967), Pask and Scott (1972), Kirton (1976), and Witkin and his colleagues (Witkin & al. 1962; Witkin & al. 1971; Witkin & Goodenough 1981) whose identification of the perceptual-functioning dimension led to the discovery of the most commonly studied dimension, field dependence-field independence, and to the development of the Embedded Figures Test (EFT). Hayes and Allinson (1994), who base their theory on Miller's (1987) information processing model of cognition, attempt to integrate the many concepts of cognitive style. The model clarifies similarities and differences between style dimensions, and relates the dimensions to the activities involving perception[2], thought[3] and permanent memory[4]. Miller groups the styles under two categories, analytic and holistic, depending on whether it is a style that is based on activity in the left or the right hemisphere of the brain.

According to the Split Brain Typology (Wilson 1988, cf. Hayes & Allinson 1994, p. 60) typical cognitive styles associated with left brain activity are field independence, reflection, receptive/systematic style, focusing, serialist style, converging and splitting. Right brain associated cognitive styles are field dependence, impulsiveness, perceptive/intuitive style, scanning, holistic style, diverging and lumping. According to Hayes and Allinson (1994) left and right brain cognitive styles are, in fact, two ends of a unidimensional construct. The authors have named the left brain cognitive

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[1] Grigorenko and Sternberg (1995) identify three main approaches to the study of style; the cognition-centered, the personality-centered and the activity or learning-centered approach.

[2] Includes the actions of pattern recognition and paying attention. Pattern recognition is the process of comparing stimuli to the information that has been previously stored in memory. Paying attention means concentration of mental activity on certain aspects of the stimuli. It is not merely a question of stimulus input, rather the individual actively works on the stimulus.

[3] Includes the activities of classification, analogical reasoning and judgment. Classification reflects the acquisition of conceptual categories. The acquisition process includes formulation and testing of hypotheses. Analogical reasoning reflects an individual's inclination to use similarity or dissimilarity between elements in an analogous situation. Judgment is a process of decision-making, where the decision can be based either on a systematic treatment of information provided, or on referring back to, often subjective, experiences.

[4] Involves the elements of representation, organisation and retrieval. The structuring and organisation of information reflects cognitive complexity or simplicity. Retrieval of information is reflected by the style dimension convergence-divergence, where the converger narrows down the search to one item, with the diverger doing the opposite; searching for several items without a specified solution.

styles "analytic", and the right brain cognitive styles "intuitive". It is possible to identify the dimension of cognitive style that predicts, better than others, the suitability for certain kinds of tasks, for example, those requiring attention deployment. Cognitive style may be utilized as the basis for improving learning and performance in organizations through the adjustment of person-job fit, the improvement of effectiveness of training and the managing of group compositions to fit the requirements of the environment and specific situations. Quality of training can be improved by matching trainees' cognitive style with the learning activities, and by matching cognitive styles of trainers and trainees. The possibilities of achieving training goals much faster through matching strategies may be of special relevance in situations where new demands are imposed on both jobs and employees as a result of organizational change. These actions may produce a better return on the training investments, however, possibilities where mismatching may be more beneficial, should be investigated carefully. Unstructured, experiential learning is less effective if the cognitive style of the employee does not match the information-processing requirements of the environment. (Allinson & Hayes 1996; Sadler-Smith 1998; Riding & Sadler-Smith 1997.)

Intrinsic and Extrinsic Causes of Job Satisfaction/Dissatisfaction

According to the situational, or job characteristics approach[5], which constitutes the approach in the present study, job satisfaction depends on the nature of the job and the conditions, the work environment, or the "context". Context *per se* is a problematic concept. We need to define the context we intend to study, or else the concept will lose its explanatory value. Almost anything can be explained by the fact that the environment affects people, but in fact, context and activity interact (Säljö 2000). Also the adoption of a preferred cognitive style is a process between information processing and situations in the environment. There is not a context, which creates an activity, but activities are part of, define and redefine the context, which may or may not be physical (Säljö ibid., 130), as is the case in the present study. Knowledge about different contexts helps the planning of activities, or may steer thinking in certain directions causing satisfaction or dissatisfaction.

The two-factor theory of job satisfaction, also called the dual-factor or motivation-hygiene theory, by Hertzberg, Mausner and Snyderman (1959) has probably contributed the greatest to research on job satisfaction in organizational settings (cf. Arvey, Carter & Buerkley 1991). According to the theory, elements associated with satisfaction are content based, such as achievement, recognition, advancement, responsibility, and the task itself. These *satisfiers* or *motivators* and *growth factors* lead to job satisfaction. The elements associated with job context, e.g. compensation, supervision, co-workers, working conditions, company policies and practices, are *dissatisfiers* or *hygiene* or *maintenance factors* serving to prevent dissatisfaction. According to the theory, content elements are solely related to job satisfaction, and context elements to job dissatisfaction (or the prevention of it). The theory has been criticized for being an over-simplification. More recent research acknowledges individual differences in job satisfaction and dissatisfaction, i.e. both can be content and context based (Judge, Locke & Durham 1997).

The content-context framework of job satisfaction can be compared to Bandura's (1986) theory on the development on intrinsic interest. "Content elements", especially achievement, advancement and the

[5] Judge, Locke and Durham (1997) identify three main approaches to the study of job satisfaction: the situational, the dispositional, and the person-situation interaction approach.

feeling of responsibility, may be intrinsic satisfiers of personal significance, where, according to Bandura, it is the person's own affective reactions to ones performance that constitute the principal source of reward. "Context elements", that is compensation, supervision, co-workers, working conditions, company policies and practices are what could be compared to Bandura's "extrinsic incentives". A performance that fulfills or exceeds what has been aspired for is a considerable source of satisfaction for the individual. The activities in which the individual invests self-evaluation are sources of considerable variation. What one person considers as an important object for self-evaluation is devalued by or indifferent for another (Bandura 1997). Positive incentives are largely used to increase people's interest in different situations (Deci & Ryan 1985, c.f. Bandura 1997), however, there are problems associated with two-factor theories in psychological and personality research in general that one should be aware of. Focus is easily placed on the two factors and their relationship and relative importance to each other on the expense of other possible factors. One of the aims of the present study is to shed light on the role of cognitive style in differences in sources of job satisfaction and dissatisfaction.

Methods

Hypotheses and Research Questions

The aim of the ex post facto study is to gain a more thorough understanding of the role of differences in cognitive style in work contexts. The following research questions are addressed:

Are there relationships between analytic and intuitive cognitive style, and age, gender, level of education, and position?
How is the perception of cognitive demands of work environment related to cognitive style and the background variables?
How is cognitive style related to the perception of extrinsic and intrinsic causes of job satisfaction and dissatisfaction?

According to the logical/rationalist model of thinking expert and novice thinking differ in qualitative aspects. Experts utilize information in the problem statement to develop a comprehensive representation, perceiving the deep structures of a particular problem, whereas novices perceive the surface structures of the problem. (Simon & Simon 1978, cf. Laufer & Glick 1996.) Experts free themselves from rules and create flexible strategies to problem solving (Scribner 1983) – a characteristic of the intuitive problem solver. To this background, intuition in cognitive style could be expected to increase with age. Previous research (cf. Allinson & Hayes 1996) with the Cognitive Style Index (CSI), however, consistently show that older age groups tend to be more analytic than younger ones, but CSI scores tend to decrease, that is, become more intuition oriented as status increases. Therefore, the hypothesis is that analysis in cognitive style increases with age and intuition increases with status.

Based on previous research, women generally score higher on the Cognitive Style Index (Allinson & Hayes 1996). Therefore, younger women are expected to possess a more intuitive cognitive style than older women, and younger men a more intuitive cognitive style than older men. Younger women are

expected to be more intuitive than older men, but more analytic than younger men. Older women are expected to be more analytic than older men.

The extrinsic causes of job satisfaction, e.g. compensation, supervision, co-workers, working conditions and company policies and practices, and elements that deal with others (especially supervision, co-workers) in the organization appear to be important to the intuitive person, who is typically open, social, outward oriented, impulsive, adopts a wholistic approach to problem-solving, and arrives at a conclusion through immediate judgment based on feeling and social cues. The intrinsic causes of job satisfaction; achievement, advancement, responsibility and the task itself, appear to be important to the analytic person, who pays attention to detail, focuses on the hard facts, adopts a systematic approach to problem-solving, is more introvert and depends more on analytical judgment and less on social cues. The study investigates whether there exists relationships between analytic information processing style and intrinsic sources of job satisfaction and dissatisfaction on one hand, and intuitive information processing and extrinsic sources of job satisfaction and dissatisfaction, on the other.

The Sample

The population consists of employees in Finnish small and medium sized enterprises. The sample consists of 228 managers, employees and workers in one-hundred small and medium sized enterprises in and around the capital area in Finland. Respondents have been selected from a range of companies representing different industries. The companies were selected among firms participating in two different training and development projects in Finland funded by the European Social Fund. The sample was expanded with twenty-five randomly or by recommendation selected enterprises outside these two development programs.

The enterprises employed between 2 and 450 employees, with sixty-six on an average. Data was gathered through personal interviews at the subjects' work place. In all companies the executive/manager and between one to five employees were interviewed. The employees to be interviewed were generally selected by the manager.

Instruments

The Cognitive Style Index (CSI), by Allinson and Hayes (1996) is a thirty-eight item self-report questionnaire with a three-point scale from 0 to 2 measuring intuition and analysis in cognitive style. The closer the score is to the theoretical maximum of 76 points, the more analytical the approach and vice versa, the lower the score, the more intuitive is the individual's approach. The CSI was developed to meet the growing need for psychometrically sound instruments for the measurement of cognitive style in organizational settings.

The Academic Environment Index (Sadler-Smith & Little 1998), a twelve-item self-report questionnaire, also with a three-point scale from 0 to 2, has been developed to measure perception of the cognitive demands of work environment, and is commensurate with the CSI. The closer the score is to the theoretical maximum of 24 points, the more analytical the approach and vice versa. The instrument has been developed for use in academic environments, which may to some extent affect

validity of the measure in the present context. Nevertheless, the authors suggest transference of the approach to work settings.

Finnish translations with five-point Likert scales (here called CSI_{FIL} and AEI_{FIL} indicating that they are translated versions with a modified scale) have been used in the present study to measure cognitive style and perception of the cognitive demands of the work environment. Instead of treating cognitive style as a unidimensional construct, analysis and intuition were treated as two independent dimensions. The reason for this was that analysis and intuition do not necessarily rule each other out. With the five-point Likert scale it is possible to score high or low on both analysis and intuition.

Sources of job satisfaction and dissatisfaction were investigated through two open-ended questions.

Data Analysis

The data is both quantitative and qualitative. In analyzing qualitative data, the researcher first has to pick the data apart, then reorganize it through theoretical concepts (Strauss & Corbin 1990). In the present study responses to the open-ended interview questions were content analyzed for their content characteristics (different causes of job satisfaction/dissatisfaction were distinguished in the responses, and grouped under theme categories, each either intrinsic or extrinsic) and their formal characteristics (each individual's number of responses in each category). Depending on which type of sources there were more of, the individual received a rating indicating whether the sources were intrinsic or extrinsic. The respondents were grouped into one of nine categories according to whether they had an intrinsic/intrinsic, intrinsic/extrinsic, extrinsic/intrinsic or extrinsic/extrinsic combination of sources of job satisfaction and dissatisfaction. Categories were also included with data on only either job satisfaction or dissatisfaction existing, and with the data on the other missing (thereof the total of nine categories). The interest here is primarily to understand the sources of job satisfaction and dissatisfaction of employees in order to prevent the loss of knowledge and skills through early retirement. Therefore, only the employees and workers in the sample (N = 126) were addressed.

Feelings of satisfaction or dissatisfaction may occur only when triggered by a question, or when the circumstances require evaluations (Smith & al. 1969). By allowing the subjects themselves to identify and name the elements which they weren't satisfied with and which they where content with, I hoped to aquire authentic responses uninfluenced by the options displayed by ready measures. The question intended only to measure causes of job satisfaction/dissatisfaction, not the actual "amount" or degree of job satisfaction and dissatisfaction. A comparison of the responses to theoretical models of job satisfaction indicated that the questions were correctly understood, and that the elements mentioned can be identified in theoretical models (e.g. Hertzberg, Mausner & Snyderman 1959; Orpen 1974).

Statistical analyses include exploratory factor analysis, analysis of variance and general linear modeling.

Validity

There is a number of sources of inaccuracies in self-reports. Broadly, in the analysis of jobs, sources of inaccuracies can be divided into two categories: social and cognitive. Social sources of inaccuracies demonstrate the fact that individuals act in a social context affected by normative pressures. Cognitive sources of inaccuracies are due to individual limitations in information processing. (Morgeson & Campion 1997.) Traditionally, it has been assumed that individuals first react perceptually, then affectively and behaviorally to their work environment. According to this view, the environment, not the individual differences, is the predominant causal factor. Perception, as caused by the environment, is assumed to be a valid indicator of the environment. Social information processing theory sees job characteristics as a social construct. Social cues on the immediate information provided by others would indicate that self-reports on job characteristics are social realities shared by the members of a particular environment. On the other hand, it has been suggested that the impact of social cues is more important in situations where the respondent possesses only limited information about his environment, and is relying on the information provided by others. (Spector 1992.) Socio-cultural theory emphasizes the interview as a very complex situation of social interaction (cf. Säljö 2000).

Job attitudes might affect the way the job characteristics are reported. Individuals who like their jobs rate them higher on job characteristics than those who do not like their jobs. Also mood seems to have a similar effect on the self-report of job characteristics and job satisfaction. Theories, such as attribution theory and cognitive categorization, imply that cognitive processes, which provide organization to individual perceptions, influence self-reports. For example, individuals who like their jobs tend to perceive their work environment in ways that reinforce their positive affects. It is possible that personality affects job choice leading to a relation between personality and objective working conditions, and correlation between personality and self-reports. (Spector 1992.) Cognitive style in itself may be such a cause, however, the present study does not aim at gaining data on the objective working conditions, rather on the respondents' *perception* of the cognitive demands of the work environment. In fact, "objective" measures of the environment may be quite crude (Kulka 1979). Much of the psychometric research on employee perceptions of their work and work environment has been concerned with the subjectivity of self-reports (cf. Spector & Brannick 1995). In the present study, focus is on the respondents' perceptions of their environment, and thus subjectivity of the responses is not to be considered a threat to validity.

The sources of stimuli, i.e. self-report questionnaire and interview situation, together with the content analysis procedure and the quantification of the responses to the open-ended questions are all possible sources of method variance in the present study. Effort was put into making the instructions as clear and easy to understand as possible, and following the prescribed administration of the instrument to reduce measurement error (cf. Nunnally 1978). All interviews were taped for the purpose of checking the initial answers at later stages of the data analysis. In the actual interview situations several respondents did not wish to fill out the questionnaires (especially the CSI containing 38 statements) by themselves, but requested the interviewer to fill it out. The respondent read through a copy of the CSI given to them, and named the scores they wished the interviewer to write down. In such cases, the instrument could become particularly exposed to method variance due to subject personality, including social desirability; a person's tendency to create a more positive image of one-self to the researcher than actually is the case. Social desirability is a widely recognized, but not yet a resolved problem. In the present study, the employees to be interviewed were generally selected by the manager. The hand-picked employees can be expected to be so called trusted, usually older employees, who are known to represent the organization in a favorable light. This may bias the results and is a concern especially with regards to the open-ended question on job dissatisfaction.

Moreover, other problems with self-reports concern semantic problems, the subject's response style, test-taking habits, acquisition, that is tendency to agree or answer "yes", and the subject's conception of the purpose of the questionnaires. (cf. Nunnally 1978). Possible social cues (cf. Spector 1992) unintentionally provided by the interviewer may also have affected the respondents.

Results

A set of exploratory factor analyses on the CSI$_{FILI}$ and AEI$_{FILI}$, with Principal Axis Factoring as the extraction method, was performed to determine which rotation technique, orthogonal (Varimax, Quartimax), oblique (Oblimin) or a combination of these (Promax) produces the most suitable solution. Missing values (20-24 missing values per item for CSI$_{FILI}$, 11-13 for AEI$_{FILI}$) were replaced with means. The total number of valid cases was 228.

Two-factor Promax solutions were chosen as the most appropriate ones for both the CSI$_{FILI}$ and the AEI$_{FILI}$ (the scree plot suggests that the appropriate number of factors for both is either two or four). In the CSI$_{FILI}$, twenty items load on factor 1, which is an analytic factor, eighteen on factor 2; an intuitive factor. Five items have very low (<.3) communalities. Alphas for the two factors are .878 and .777, and deletion of any items does not substantially improve the reliability of the measure. All items were retained. The two factors are not strongly correlated (-.283).

In the AEI$_{FILI}$ six items load on factor 1, which is an analytic factor, six on factor 2, an intuitive factor. Two items have very low (<.3) communalities. Alphas for the two factors are .703 and .776. These are correlated to some extent (.556). Two sets (analytic and intuitive) of regression factor scores were calculated for both the CSI$_{FILI}$ and AEI$_{FILI}$ for further analysis.

A set of univariate ANOVAs were performed to determine the relationship between analytic and intuitive cognitive style and the background variables. Position[6], level of education[7] and age group[8] have significant main effects on analytic cognitive style (corrected model: $F = 4.144$, $df = 37$, $p. = .000$, $\eta^2 = .449$). The interaction effect is not statistically significant[9], however, $\eta^2 = .180$ suggests a good effect size. The younger, the lower the analytic score. The higher the level of education, the lower the score on analytic style. Both older men and women aged forty-five and over score higher on analysis in cognitive style[10]. Men and women under forty-five score negatively on the analytic dimension.

All positions differ significantly from each other with regards to analytic cognitive style. Managers score the lowest, and workers the highest on analytic style. The younger managers under forty-five scored significantly higher on intuition in cognitive style than the older managers/executives[11], and

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[6] ($F = 3.672$, $df = 2$, $p. < .05$, $\eta^2 = .038$)
[7] ($F = 11.655$, $df = 2$, $p. = .000$, $\eta^2 = .110$)
[8] ($F = 2.526$ $df = 4$, $p. < .05$, $\eta^2 = .051$)
[9] ($F = 1.422$, $df = 29$, $p. = .086$, $\eta^2 = .180$)
[10] ($F = 13.099$, $df = 3$, $p. = .000$, $\eta^2 = .149$)
[11] ($F = 4.292$, $df = 1$, $p. > .05$, $\eta^2 = .047$)

significantly lower on analysis[12]. Managers and employees under forty-five score negatively on analytic style, but workers score positively. The same pattern is repeated with the forty-five year olds and older, however, all groups receive slightly higher scores.

Managers perceive their work environment to demand more intuitive cognitive information processing[13] than do employees or workers, who find the cognitive demands least intuitive.

An analysis of the responses to the open ended questions yielded the following main categories of sources increasing job satisfaction: security, equality, nature of the work, flexibility and individuality, leadership, atmosphere, personal growth and external motivators, and the following dissatisfiers: atmosphere and workplace relations, human resources management, communication, leadership, division of work load and responsibility, pay and tenure, and poor success of company. No significant relationships to cognitive style were found.

Discussion of Findings and Conclusions

Significant differences between groups emerged in the findings, and the implications of these are discussed below.

Men under forty-five score the lowest, and women aged forty-five and over score the highest on analytic style. Intuitive cognitive style appears to decrease with age among managers, but slightly increases among workers and employees. Position also has a significant main effect on analytic style, and both main and interaction effect (with age) on intuitive style. Managers and employees under forty-five score negatively on analytic style, but workers score positively. Among the forty-five year olds and older, managers are still the highest scoring group on intuition, employees come second and workers third, however, despite the negative scores, employees and workers appear to come a bit closer to analytic style. The result may be due to the fact that the workers in the sample are significantly older than the managers, and there appears to be a shift in cognitive style between the ages under 45 and 45 and over with the younger age group being more intuitive than the older one. A higher level of education may develop intuitive style skills. The higher the level of education, the more the person may have been subjected to tasks and situations, where intuitive style skills, such as the ability to grasp things from a holistic perspective, are needed and even preferred. The education may also have developed certain social skills, which are important, not least in managerial and leadership positions, where also the level of education is higher. The women in the study had received less training than the men and they also scored generally higher on analysis. The stereotypic assumption that women are, in general, more intuitive and men more analytic, is challenged by the results. The younger women had a higher level of education than the older women, and they scored higher on intuition.

Managers perceive their work environment to demand more intuitive cognitive information processing, whereas workers and employees perceive the work environment not to demand intuitive information processing. High-status jobs and analytic cognitive style go, conceptually, hand in hand, but it remains to be seen whether it is possible to change conceptions about what is traditionally thought of as "lower

[12] ($F = 9.755$, $df = 1$, $p. = .002$, $\eta^2 = .100$)
[13] ($F = 18.037$, $df = 2$, $p. = .000$, $\eta^2 = .138$)

status jobs" in the service sector often occupied by women, if research shows that these jobs tend to require analytic information processing.

There were no significant relationships between cognitive style and the experiencing of sources of job satisfaction and dissatisfaction. Apparently sources of job satisfaction and dissatisfaction cannot be explained neither through information processing style nor through the experiences of the cognitive demands of the work environment. Here the number of respondents was fairly small.

Löfström and Pitkänen (1999) show in their study on management of ageing human resources that over forty-five year old workers have the most positive view of ageing employees. Younger employees and both younger and older managers see the ageing in a less positive light. The greatest difference is between young managers and older workers. In Johansson's (2001) study on younger people's perceptions and experiences of older colleagues, managers and subordinates, none of the respondents who had had older subordinates, reported any advantages with the situation. One of the main problems was that the younger managers, who also had little work and managerial experience, were not in a natural position of authority and found it difficult to establish credibility and trust. Some older subordinates expressed discontent with having a younger manager. Also in the present study, the greatest differences in cognitive style are between older workers and younger managers.

Hayes and Allinson (1998) argue that cognitive style differences affect what situations individuals attend, how they interpret data, and how these interpretations influence their mental models. Different mental models together with demographic characteristics in the organization, such as age and tenure, will influence information processing in the organization, because members of the same age group are likely to have experienced similar social, political and economic environments, and those with similar lengths of tenure are likely to have experienced a common organizational history (Doyle Conner, Kinicki & Keats, 1994, cf. Hayes & Allinson, ibid). These acknowledged differences between groups in organizations may lead to difficult situations, e.g. conflicts between young managers and older employees. Managing diversity in the work context involves bringing together people with different styles and utilizing the advantages of different information processing styles to create synergy (Hayes & Allinson, 1998). In fact, a shared approach to information processing which relates to the requirements of the work among different groups in an organization influences the development of collective mental models. These, in turn, influence the quality of organizational learning, which is most effective when the group's information processing and the requirements of the opportunities and problems are in balance. The sharing of information and interpretations is an important element of organizational learning. (ibid.).

Managers may not be aware of the amount and types of knowledge that staff possesses, e.g. knowledge of organizational history. Also, the ageing may be experts at their jobs and master it better than the manager or their supervisor does. In a situation like this, traditional leadership is challenged. Differences in information processing style may account for what is emphasised by different groups, i.e. young managers, and what characteristics are associated with members of other groups, i.e. ageing workers. Positive attitudes arise from the long work experience associated with the ageing. Possible lack in performance is compensated by knowledge and experience. Negative attitudes, again, arise from the assumption that ageing and innovation is not a compatible combination. According to Boerlijst (1998) this assumption is a strong factor pushing the ageing towards retirement. Innovation, however, can also take the form of tacit knowledge. In cultures that emphasise performance, attention is given excessively to visible actions on the expense of tacit knowledge, i.e. strategic thinking (Garrick 1998).

A greater understanding of different information gathering and processing styles, and awareness of their implication in the work context may help facilitate training, enhance learning, improve person-job fit, improve inter-personal relations, and increase job satisfaction. Cognitive styles may provide a fast and cost-saving alternative as they are relatively easy to test, and the results can be utilized immediately in adjustments in job design, training schemes and so on (Löfström 1998).

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